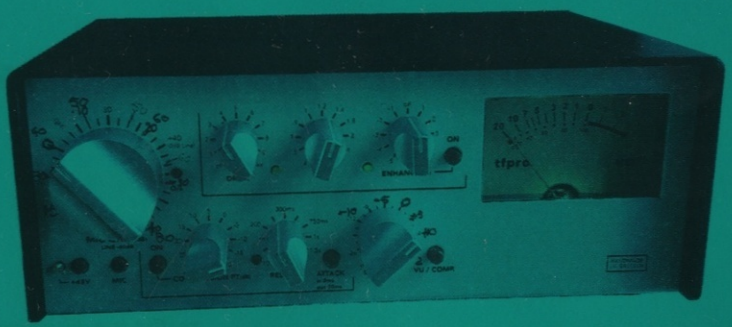
tfpro BRICK 2

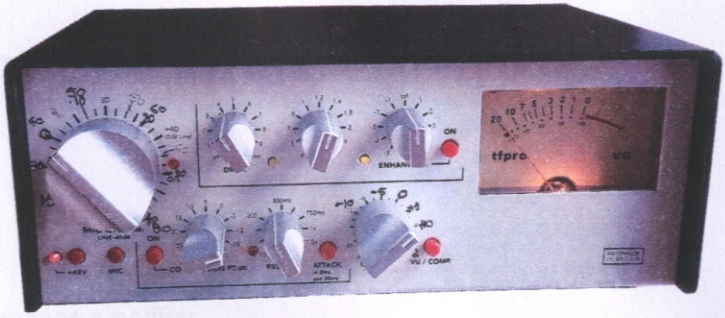
HANDBOOK for BRICK2 V1.02



www.tfpro.com
Handbook for standard
and Eco versions Nov2020

tfpro BRICK 2

HANDBOOK for BRICK2 V1.02



www.tfpro.com
Handbook for standard
and Eco versions Nov2020

BRICK 2

BRICK2 HANDBOOK version V1.02

CONTENTS

3) Microphone amplifier

4) Compressor, harmonic enhancer

5) Panel controls

8) Applications

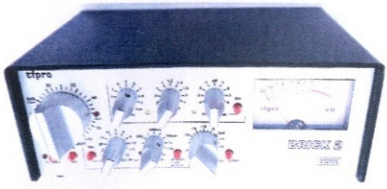
10) Technical specifications

12) Guarantee and declaration of conformity.

BRICK 2

25 years ago Ted Fletcher designed a microphone amplifier and compressor. It quickly became known as 'THE BRICK' and achieved a reputation for smooth vocal sounds.

The BRICK2 Ted's Definitive Channel



The BRICK2 is a 2U 'half-rack' size 'brick' re-designed to be a complete 'front-end' for highest quality recording as well as a sophisticated analogue tool for remixing; a unit that is an easy to operate multi-function front end with all the audio qualities of the original 'Brick'.

The BRICK2 is made up of superior circuit elements; A microphone amplifier, an 'optical' compressor, a harmonic enhancer/de-esser and a dual output amplifier, with an analogue meter.

BRICK 2

THE MICROPHONE AMPLIFIER

The amplifier has two inputs; an input for microphones (including switchable phantom power), and an input for line or instruments. Additionally, there is a 'mix' port allowing a further signal to mix in.

Main inputs are via a transformer operating in Ted Fletcher's unique current mode system; this enables the use of a physically smaller, specially designed transformer which retains the subtle quality of a transformer input, but as it is operating in current mode, has no voltage generated across the windings so there can be no hysteresis distortion; the response is maintained down to 5Hz (if required) and is flat up to well beyond 20K. This arrangement gives perfect transformer isolation and wide parameters with good noise performance. 48V phantom power is switchable and any severe input overloads are indicated with a warning light. A 20dB pad is provided for ultra-high output capacitor microphones, although even without the pad, the input can handle in excess of 0dBu at all frequencies. A 75Hz filter gives protection against LF overloads.

MIX INPUT

A separate line level input (unbalanced) allows for any other unit, say another BRICK2, to share the compressor, enhancer and output of the BRICK2 by mixing with the output of the microphone amplifier.

THE COMPRESSOR

The compressor is the famous Ted Fletcher design of optical compressor that naturally mimics the dynamics of the human ear, sounding perfectly natural when applied to both the human voice

and classical musical instruments. A feature of the optical design is that the audio retains brightness and sparkle even under heavy compression.

The compressor has an extremely soft 'knee' and the ratio changes with programme material and transient content.

There are variable controls for threshold, and release times, and a 2-step attack setting. Analogue metering gives an indication of depth of compression in dB.

THE HARMONIC ENHANCER/DE-ESS

To 'brighten' the sound, elements of the audio signal are filtered and then processed in a non-linear compressor to produce specific harmonic content. This is then remixed either as an enhancer or a de-esser. The enhancer controls are 'Drive', 'Q' and 'Enhance', with led indication of enhance action.

THE METERING

The illuminated moving-coil meter has a VU scale with the dynamics of the needle developed in a digital world where real 'moving needles' are actually easier to read and less tiring to work with.

PANEL CONTROLS

INPUT GAIN smoothly controls microphone or line gain through the specially wound input transformer and dual-linked pre-amplification stages. The circuitry combines the old classic way of linking a microphone to an amplifier via a high quality transformer, and some 21st century physics

minimising distortion to a point where it is no longer measurable. This circuit combination amplifies all the 'quality' of the microphone, losing nothing and is clearly and noticeably superior particularly when using high quality dynamic microphones.

20dB PAD SWITCH (rear panel) reduces the input sensitivity by 20dB. This 'shifts down' the sensitivity of the pre-amplifier to optimise it further for very high output capacitor microphones.

48V PHANTOM switches on the 48V phantom supply to power capacitor and some ribbon microphones. This applies to the XLR input only.

MIC SWITCH Switches between the Mic (XLR) and Line (1/4-inch Jack socket) inputs. Both inputs are routed through the input transformer.

HIGH-PASS FILTER (rear panel) engages a very gentle (6dB per octave) 75Hz high pass filter for removing dangerous and troublesome low frequency signal content from either mic or instrument sources without causing any distorting phase shifts.

COMP ON enables or by-passes the optical compression function.

COMPRESSION PT is a rotary control for the threshold of the compression circuit. Minimum is the same as having the compressor by-passed. When the compressor is active in reducing gain, an orange LED will flash giving a rough indication of compression depth. The compression ratio varies with the programme material and the depth of

compression. A unique function of this compressor is that the ratio can decrease during high audio levels allowing transient peaks to remain significant.

ATTACK SWITCH allows for two different attack times (although the actual attack shape is non-linear and set to sound optimum for vocal recording).

RELEASE is a wide-ranging variable control to set the 'fallback' time of the compressor.

VU/COMP switches the VU meter from reading audio to reading compression. When reading compression, the needle sits at '0' and indicated gain reduction by moving backwards from right to left. When reading audio the meter is calibrated in dB, '0'dB represents a normal audio volume level immediately before the output gain control.

CAUTION, this is a VU meter and so it has the normal VU under-read characteristic for speech and percussive music. Speech can have an under-read of up to 12dB.

OUTPUT is a rotary control setting output. When turned to the '0' point then the audio output will approximate to the '0' as shown on the VU meter. This is an audio output of 0Bu (0.775V RMS)

DRIVE controls the audio level going into the control circuit of the harmonic enhancer.

'Q' has an effect on the sound of the harmonics that are being generated in the enhancer. A yellow LED indicates the presence of drive audio.

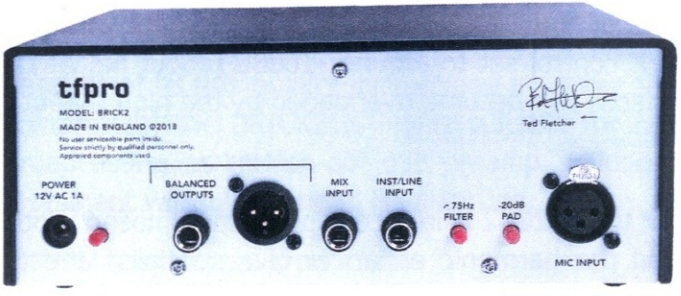
BRICK 2

ENHANCE has a vertical 'off' position. Moving the control clockwise from the 'off' adds the harmonics to the original sound providing an enriched sound to vocals. Turning the control to the left subtracts harmonics and this can be used as a 'de-esser' by tuning the frequency with the 'Q' control.

ENHANCE ON is a push-button to enable the enhancer. When enabled there is a yellow LED showing.

POWER SUPPLY The mains power supply unit converts mains voltage to 12VAC. Internal regulators and converters produce professional level 15-0-15V and 48VDC. NOTE the power supply provides 12VAC:

NOTE, The BRICK2 can be operated successfully with a 20 to 24V DC power supply but with slightly reduced overload margin and reduced phantom power voltage. The 'zero' indication when the meter is switched to 'comp' changes to show a small constant compression, this does not affect the operation of the compressor.



APPLICATIONS

******** Studio Recording

The BRICK2 is an ideal 'front end' to a ProTools system or any high-quality computer recording system. The transformer input pre-amplifier gives brilliant results from any musical source; the preamp in the BRICK2 is of such a standard that mixing channels and mic inputs in a mixing desk become redundant when comparing the sound and overload margin against the BRICK2. The compressor provides a transparent level of protection for your software against accidental clip, so you can record at optimum levels without the risk of ruining a 'take' through overload. When used with professional quality systems and converters the capabilities of the BRICK2 preamplifier becomes clear and recordings can be made to highest professional standards.

LEVELS

As the audio output of the BRICK2 is high, I recommend starting with the output gain control set to around -10dBu (about halfway). Many modern interfaces can become overloaded by the high output.

**** Mixing

A significant use for the BRICK2 is in record production mixing. Both the compressor and the harmonic enhancer give specialist effects that are difficult or impossible to achieve with conventional digital plug-ins as well as providing the required effect with no delay or latency penalty.

BRICK 2

****** Location recording

The BRICK2 is sufficiently portable and rugged so that the same quality front end features can be taken anywhere.

******* Live sound production and Direct Injection

The transformer 'current mode' preamplifier gives obvious sonic improvement when used with dynamic microphones on stage and when amplifying instruments with specialist pick-ups.

Users of Ted Fletcher's 'current mode' preamps regularly report how much easier it makes live engineering with instruments like acoustic bass, violin, acoustic guitar etc., anything that may present an 'odd' impedance or large dynamics can be difficult to control and sweeten using conventional preamplifiers, in this situation the BRICK2 is an essential tool combining the specialist transformer input that eliminates problems with long microphone cables, and a compressor controlling these signals with transparency.

****** Broadcasting and communications

Because of its fine quality microphone amplifier and the sympathetic compressor, the BRICK2 is highly suitable for radio and television broadcasting as an 'on-air' mic preamp making voices clean and prominent without overload or distortion.

****** Commercial production

When the compressor is 'pushed' with short attack and release times the voice sound produced can be made to sound very urgent and forward. This is particularly useful in commercial voice-overs. TIP,

run the input gain high, the limiting factor is that this can bring up the sound of breathing between syllables; how good is your editing!

TECHNICAL SPECIFICATIONS

Number of simultaneous inputs 2, Either microphone via XLR or line via jack input plus a further line level input via the MIX IN port

MICROPHONE INPUT XLR Transformer balanced. Current mode system operates correctly with any microphone impedance. (microphone 'sees' >800-ohm impedance) Max system gain 80dB. Max input level 0dBu (or +20dBu with pad engaged)

LINE INPUT 60Kohm transformer balanced. Max system gain 30dB Max line input level >+30dBu

MIX INPUT 20Kohm unbalanced -8dBu fixed gain.

OUTPUTS Nominal 0dBu from balanced ¼ inch jack socket and XLR.

AMPLITUDE FREQUENCY RESPONSE microphone and line, +0 -0.5dB 7Hz to 22KHz.

HARMONIC DISTORTION (THD) below 0.003% at all frequencies, gains and levels up to +18dBu output. (Low frequency harmonic distortion increases by definition as the compressor operates, depending on release setting.)

NOISE Equivalent to 126dB below input for mic gains above 50dB. System noise generally 90dB below operating level.

POWER 12VAC external power supply. approx. 5 watts. Because of a unique power supply system, the BRICK2 can operate from a 24V DC supply if required.

SIZE ½ rack, 2U (brick) 220mm X 140mm X 85mm.

WEIGHT 1.43 Kgs.

REGULATIONS AND SAFETY

The BRICK2 has been designed and built to conform to all known safety requirements in the world.

Within the European Union the BRICK2 meets and conforms to all requirements for electrostatic and electromagnetic emissions and conforms to the safety requirements confirmed by the 'CE' symbol on the unit.

In the USA the BRICK2 complies with UL requirements in that the external power supply is UL approved.

The input transformer (active on both mic and line inputs) is tested to have a galvanic safety isolation of 500 volts.

POWER EARTH (GROUND) CONNECTION AND SIGNAL GROUNDS.

The power supply is isolated from mains earth, the enclosed mains transformer is double-wound and complies with EEC standards of safety as well as being UL approved.

Audio ground is connected to the metal chassis and the 'screen' of audio connections are bonded to the chassis.

BRICK 2

WARRANTY

In the unlikely event of a breakdown please return the unit in its original packing through the supplier. The unit will be attended to immediately and returned via your supplier. Breakdowns will be repaired free of charge for a period of 12 months from purchase.

DECLARATION OF CONFORMITY

This analogue audio processing equipment conforms to the standards and requirements of the European Economic Community. The EC Harmonized Standards that have been applied are:

a) Electrical equipment (safety) Regulations 1994 (S.I. 1994/3260

b) Electromagnetic Compatibility Directive (89/336/EEC) incorporating (S.I. 1992/2372)

CE 2016

Designed by Ted Fletcher and hand assembled in England.

BRICK2 Version 1.02

Updated November 2020 TF

TFPRO is in association with Alice Ltd.

Bognor Regis PO21 4HD